







Material Handling Equipment



Åkerman EW230B-HD, EC230B, EC300, EC450, EC650




- **Operating Weights:**
*Incl. cab with 48" elevation,
generator set and scrap
handling equipment.*
EW230B-HD – 51,700 lb
EC230B – 54,800 lb
EC300 – 73,700 lb
EC450 – 103,100 lb
EC650 – 144,750 lb
- *Direct injection, turbocharged
Volvo diesel engine*
- *Åkerman four-circuit
hydraulic system*
- *Comfort cab*
 - *computerized control
and warning system*
 - *ergonomic environment*
 - *low sound level*
 - *filtered air*
- *Permanent 4-wheel drive. Four
travel speeds – max. 18.6 mile/h
(EW230B-HD)*
- *Four outriggers. (EW230B-HD)*

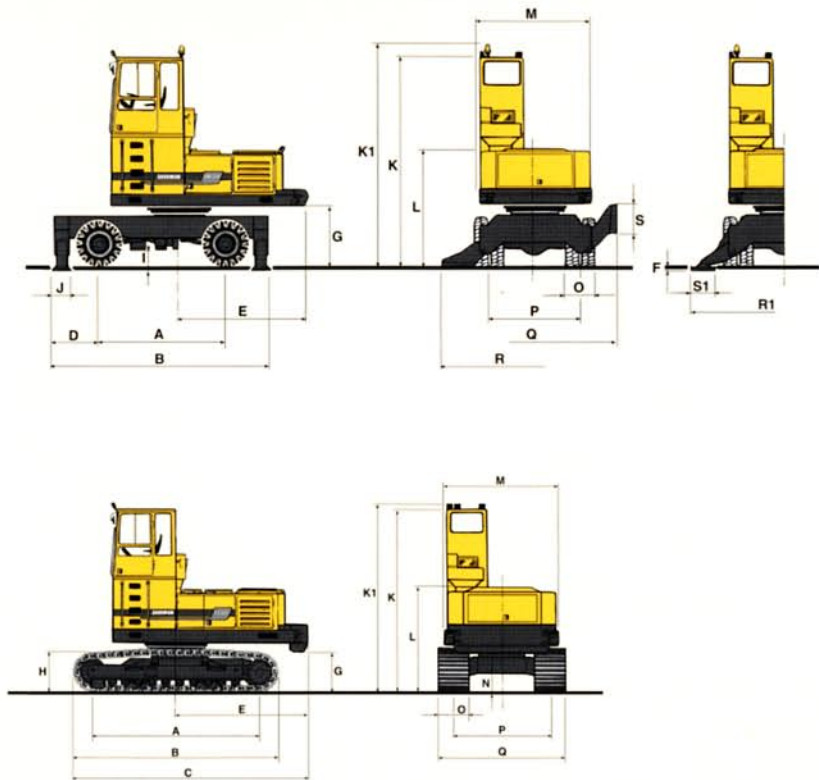
ÅKERMAN

ENGINE		EW230B-HD	EC230B	EC300	EC450	EC650
	Volvo engine Model They are turbocharged, 4-stroke diesel engines with water cooling, direct injection and electric heating elements to facilitate starting in cold weather.	TD61GE	TD61GE	TD71GE	TD122KKE (lowemission*)	TD122KIE (lowemission*)
Output at ...	r/min	2100	2100	2000	1700	1800
Net ISO 9249 / DIN 6271	hp	166	166	209	309	371
Gross SAE J1349	hp				322	386
Cylinder diameter	in	3.88"	3.88"	4.12"	5.12"	5.12"
Piston stroke	in	4.72"	4.72"	5.12"	5.91"	5.91"
Stroke volume	in ³	334	334	411	731	731
* Complies with off-road equipment emission restrictions that will be effective 1996 in California and 1997 in Europe.						
ELECTRIC SYSTEM						
	Alternator V/A	28/55	28/55	28/45	28/55	28/55
	Battery pcs (V)	4 (12)	4 (12)	4 (12)	2 (12)	2 (12)
	Battery capacity Ah	2 x 60	2 x 60	2 x 60	170	170
UNDERCARRIAGE						
	Travel - Tracks Each track is powered by an axial piston hydraulic motor. The track brakes are of multiple-plate type and are activated by spring power and hydraulically released.					
Max. tractive effort	lbf		49,910	64,070	84,080	116,680
Max. travel speed	mile/h		3.2	3.2	2.3	1.7
Number of track shoes each side	pcs		50	53	51	48
Standard track width	in		35.4"	34.6"	35.4"	31.5"
Rollers each side	bottom (top)		9 (2)	9 (2)	9 (2)	9 (2)
	Travel - Wheels One big variable piston motor mounted on a two step gearbox powers front and rear axle with hub reductions.					
Max. tractive effort	lbf	33,270				
Travel speed, high speed	mile/h	0 - 18.6				
Travel speed, low speed	mile/h	0 - 5.0				
Solid rubber tires (std)		10.00 - 20				
SWING SYSTEM						
	The superstructure is swung by an axial piston motor. Cab lock, swing gearbox and swing drive shaft are geared between the swing motor and the inner tooth race of the swing ring. The swing ring runs in sealed oil bath.					
Swing, start to stop						
90° turn	s	6.2	6.2	4.8	6.4	7.0
180° turn	s	8.2	8.2	7.1	9.0	10.5
Swing speed	r/min	7.4	7.4	5.8	6.0	5.0
SERVICE REFILL CAPACITIES						
	Fuel tank gal	89.8	89.8	89.8	203.4	203.4
	Fuel pump capacity gal/min	23.8	23.8	23.8	23.8	23.8
	Hydraulic system, total gal	105.7	105.7	113.6	203.4	221.9
	Diesel engine oil gal	5.8	5.8	6.6	7.7	7.7
	Cooling system (incl. glycol) gal	8.5	8.5	12.7	19.0	19.0

CAB		EW230B-HD	EC230B	EC300	EC450	EC650
 <p>Operator's cab with a supporting frame structure. Large windows for all around good visibility. The upper front window can be pushed up in the ceiling, and the lower one can be removed. Sliding window in the cab door.</p> <p>Heater and defroster: Pressurised and filtered cab. A 3-speed fan provides efficient heating and defrosting through 14 outlets. Prepared for Air Conditioning.</p> <p>Operator's seat: Adjustable suspension operator's seat with heating, headrest, individually adjustable armrests and hand controls.</p> <p>Acoustics: Approved according to 86/662/EEC.</p>						
<p>Exterior noise (ISO 6393)</p> <p>Average value L_{WA} (sound power level) dB (A)</p> <p>Operators position (ISO 6394) with the door closed</p> <p>L_{pA} (sound pressure level) dB (A)</p>		108	108	108	105	107
		76	77	75	73	75
HYDRAULIC SYSTEM						
 <p>Åkerman 4-circuit system all servo controlled.</p> <p>Pumps: P1 is a pressure controlled variable pump with priority to swing circuit. P2 and P3 are power and pressure controlled variable pumps with opposite cross flow priority to boom and jib. P4 and P1 (EC/EW230B-HD) is for grapple and generator.</p> <p>Mode selector: EC/EW230B-HD – EC450 has three working modes and EC650 has two:</p> <p>HLD = Heavy Lift Device, ECO = Economy, CAP = Capacity Powerboost temporarily selectable 10 sec. even in Economy and Capacity mode.</p> <p>Valve system: Boom and jib are operated by dual main valves to obtain best combination of precision manoeuvrability and minimised fuel consumption. Boom cylinder equipped with floating position valve for improved comfort and increased handling speed. Security hose rupture valve on the boom cylinder.</p>						
<p>Pump P1</p> <p>Max. pressure psi</p> <p>Max. flow gal/min</p> <p>Pumps P2 and P3</p> <p>Max. pressure psi</p> <p>Power boost psi</p> <p>Max. flow gal/min</p> <p>Pump P4</p> <p>Max. pressure psi</p> <p>Max. flow gal/min</p> <p>Servo pump</p> <p>Pressure psi</p> <p>Flow gal/min</p> <p>Steering pump</p> <p>Pressure psi</p> <p>Flow gal/min</p>		3770	3770	3770	4200	4200
		23.2	23.2	29.1	39.9	47.6
		4060	4060	3770	4350	4350
		4640	4640	4350	-	-
		2 x 37.5	2 x 37.5	2 x 44.9	2 x 64.7	2x 47.6/45.7
		3770	3770	4350	3630	-
		18,9	18,9	22,1	27,4	-
		943	943	943	943	943
		7.4	5.3	5.3	5.4	5.5
		2030	-	-	-	-
		9.0	-	-	-	-

WEIGHTS		EW230B-HD	EC230B	EC300	EC450	EC650
 Base machine incl. counterweight lb Counterweight lb Compl. weight of equipment lb Gen. set, lifting device and cab elevation lb Total weight lb * = Optional		40,200	43,300	58,900	82,450	117,100
		6,600	7,700	11,000	18,750	26,450
		6,050 5,500*	6,050 5,500*	9,200	12,850	19,850
		5,450	5,450	5,600	7,800	7,800
		51,150* - 51,700	54,250* - 54,800	73,700	103,100	144,750
EQUIPMENT						
Sealed spheric hardened steel link bearings. Hose rupture valve standard on boom lowering motion.						
Boom length ft in		22'2" 19'8" *	22'2" 19'8" *	24'3"	28'3"	33'10"
Jib length ft in		16'11" 14'5" *	16'11" 14'5" *	18'1"	21'4"	26'7"
* = Optional						

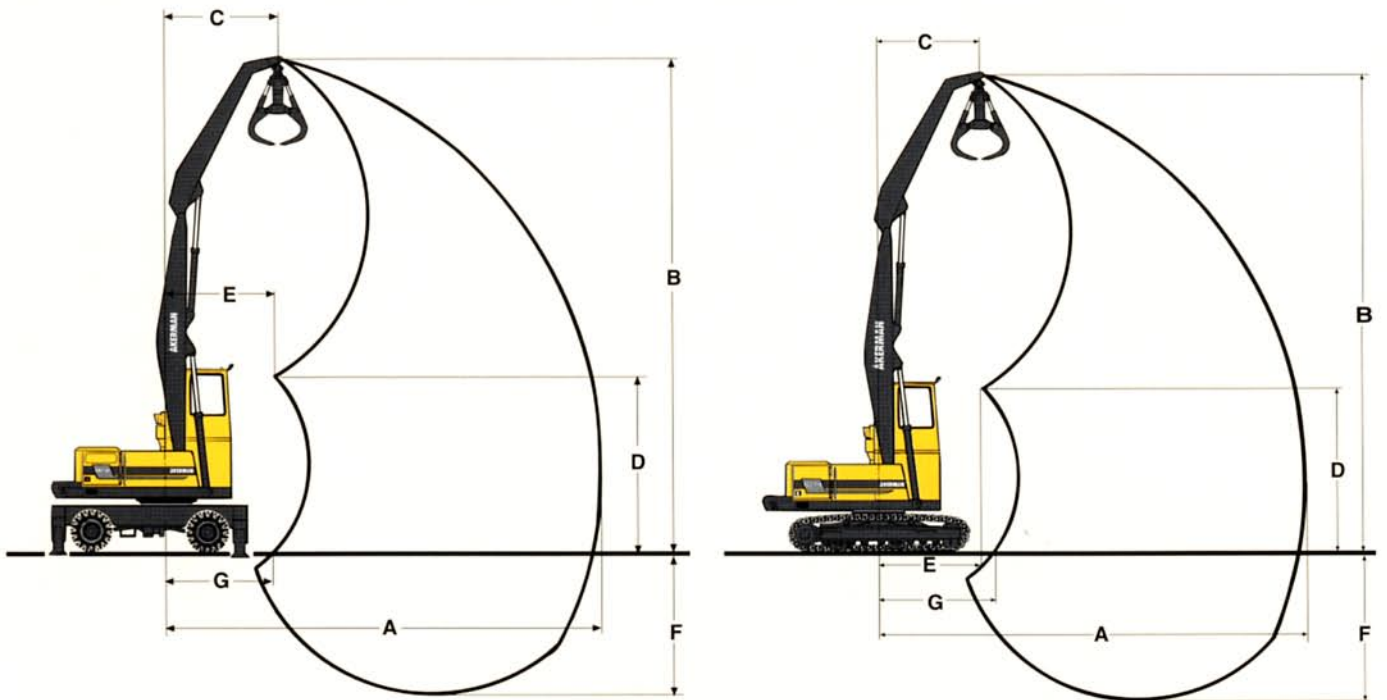
DIMENSIONS



		EW230B HD	EC230B	EC300	EC450	EC650
A	ft in	9'1"	12'3"	13'10"	14'	15'6"
B	ft in	16'4"	14'11"	16'10"	17'3"	19'7"
C	ft in	-	16'10"	18'9"	21'	22'5"
D	ft in	3'10"	-	-	-	-
E	ft in	9'5"	9'5"	10'4"	12'4"	12'7"
F	ft in	4"	-	-	-	-
G	ft in	4'2"	3'5"	3'2"	3'11"	4'9"
H	ft in	-	2'8"	3'1"	3'4"	4'1"
I	ft in	1'5"	-	-	-	-
J	ft in	1'6"	-	-	-	-
K	ft in	14'8"	13'11"	14'5"	15'	15'10"

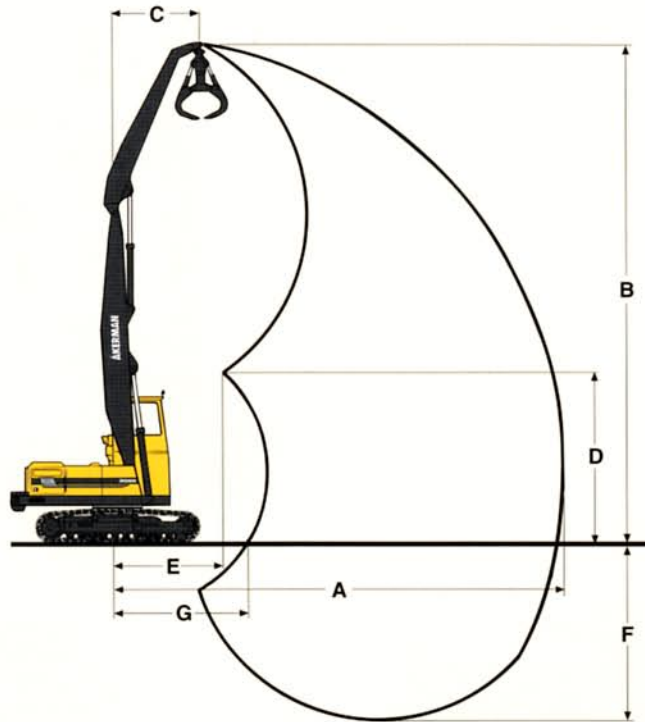
		EW230B HD	EC230B	EC300	EC450	EC650
K1	ft in	15'7"	14'4"	14'10"	15'5"	16'3"
L	ft in	8'1"	7'3"	7'9"	8'6"	9'4"
M	ft in	8'2"	8'2"	9'	9'6"	9'11"
N	ft in	1'1"	1'7"	1'5"	1'7"	2'1"
O	ft in	23,6"	35,4"	34,6"	35,4"	31,5"
P	ft in	6'3"	7'10"	8'	9'6"	11'
Q	ft in	9'9"	10'10"	10'11"	12'6"	13'7"
R	ft in	12'7"	-	-	-	-
R1	ft in	12'8"	-	-	-	-
S	ft in	1'9"	-	-	-	-
S1	ft in	1'6"	-	-	-	-

WORKING RANGES – EW230B-HD and EC230B



	EW230B-HD		EC230B	
Boom	ft in 19'8" 22'2"		19'8" 22'2"	
Jib	ft in 14'5" 16'11"		14'5" 16'11"	
A Max. reach, swing center-jib top	ft in 34'1" 38'5"		34'1" 38'5"	
B Max. height, ground-jib top	ft in 38'9" 43'		37'9" 42'	
C Distance from swing center-jib top at position B	ft in 8'6" 10'10"		8'6" 10'10"	
D Max. height, ground-jib top, boom at maximum lift, jib folded	ft in 13'9" 14'1"		13'1" 13'1"	
E Distance from swing center-jib top at position D	ft in 8'2" 8'2"		8'2" 8'2"	
F Max. depth, ground-jib top	ft in 10'10" 11'6"		11'6" 12'2"	
G Min. reach, swing center-jib top at ground level	ft in 8'6" 8'2"		9'2" 8'10"	


WORKING RANGES – EC300, EC450 and EC650



	EC300	EC450	EC650
Boom ft in	24'3"	28'3"	33'10"
Jib ft in	18'1"	21'4"	26'7"
A Max. reach, swing center-jib top ft in	42'	49'6"	60'
B Max. height, ground-jib top ft in	46'11"	54'2"	64'8"
C Distance from swing center-jib top at position B ft in	8'10"	14'5"	15'5"
D Max. height, ground-jib top, boom at maximum lift, jib folded ft in	16'1"	17'5"	18'4"
E Distance from swing center-jib top at position D ft in	9'10"	13'9"	15'1"
F Max. depth, ground-jib top ft in	17'1"	21'8"	19'8"
G Min. reach, swing center-jib top at ground level ft in	11'10"	15'1"	17'1"

LIFTING CAPACITIES EW230B-HD


Without lifting tool. Unit: pounds.

	Height of jib top	 Lifting capacity at 360° swing											
		Reach from machine center											
		10'	15'	20'	25'	30'	35'	40'	45'	50'	Max. reach	Max. ft	
19'8" boom 14'5" jib Counterweight 6,610 lb 4 outriggers down Solid tires	40'												
	35'		15,410*									12,190*	18.4
	30'			13,900*								10,330*	24.6
	25'			13,620*	12,210							9,400*	28.7
	20'		16,410*	14,100*	12,140	9,090						8,450	31.4
	15'		18,660*	15,160*	11,910	9,010						7,740	33.1
	10'		21,590*	16,230	11,600	8,860						7,360	34.0
	5'		23,590*	15,600	11,280	8,700						7,260	34.1
	0'		22,010*	15,130	11,020	8,560						7,420	33.4
	-5'	8,500*	20,020*	14,870	10,860	8,500						7,110*	31.9
-10'		15,630*	12,280*	9,120*							7,930*	26.8	
22'2" boom 16'11" jib Counterweight 6,610 lb 4 outriggers down Solid tires	40'		12,390*									10,190*	18.2
	35'			12,110*	8,960*							8,500*	25.5
	30'			12,160*	11,030*	8,060*						7,750*	30.3
	25'			12,300*	11,030*	9,170						7,330*	33.7
	20'			13,020*	11,390*	9,080	7,050					6,730	36.0
	15'		17,670*	14,210*	11,790	8,890	6,970					6,240	37.5
	10'		20,640*	15,560*	11,360	8,640	6,840					5,990	38.2
	5'		22,670*	15,140	10,920	8,390	6,710					5,890	38.3
	0'	4,860*	15,290*	14,520	10,560	8,180	6,600					5,970	37.7
	-5'	6,720*	13,760*	14,160	10,330	8,050	6,540					6,210	36.5
-10'		14,890*	13,200*	10,240	7,950*						5,620*	34.2	

* Limited by hydraulic lifting capacity.
 The above loads do not exceed 87% of hydraulic lifting capacity or 85% of tipping capacity.
 Working pressure with HLD = 4,640 psi (32 MPa / 320 bar)

LIFTING CAPACITIES FOR EC230B


Without lifting tool. Unit: pounds.

	Height of jib top	 Lifting capacity at 360° swing											
		Reach from machine center											
		10'	15'	20'	25'	30'	35'	40'	45'	50'	Max. reach	Max. ft	
19'8" boom 14'5" jib Counterweight 7,710 lb 35.4" track shoes	40'												
	35'		14,850*									12,770*	17.0
	30'			13,660								10,370	23.8
	25'			13,600*	9,760							8,080	28.1
	20'			13,620	9,720	7,300						6,930	31.0
	15'		18,210*	13,250	9,530	7,250						6,280	32.9
	10'		19,330	12,710	9,250	7,110						5,930	33.9
	5'		18,110	12,140	8,950	6,950						5,820	34.1
	0'		17,270	11,680	8,690	6,820						5,880	33.6
	-5'		16,900	11,410	8,530	6,750						6,200	32.2
-10'		16,560*	11,340	8,500							7,330	28.2	
22'2" boom 16'11" jib Counterweight 7,710 lb 35.4" track shoes	40'		11,840*									10,740*	16.5
	35'			11,780*								8,600*	24.6
	30'			12,190*	9,870							7,450	29.6
	25'			12,240*	9,870	7,350						6,180	33.2
	20'			12,860*	9,700	7,280	5,630					5,450	35.7
	15'		17,200*	13,150	9,400	7,110	5,570					5,010	37.3
	10'		19,000	12,440	9,010	6,890	5,450					4,750	38.2
	5'		17,450	11,700	8,600	6,650	5,320					4,650	38.4
	0'		16,400	11,100	8,250	6,450	5,210					4,680	37.9
	-5'		13,740*	10,740	8,010	6,300	5,150					4,860	36.7
-10'		14,610*	10,600	7,910	6,250						5,220	34.8	
-15'			10,280*	7,940							7,610	25.9	

* Limited by hydraulic lifting capacity.
 The above loads do not exceed 87% of hydraulic lifting capacity or 85% of tipping capacity.
 Working pressure with HLD = 4,640 psi (32 MPa / 320 bar)

LIFTING CAPACITIES FOR EC300


Without lifting tool. Unit: pounds.

	Height of jib top	 Lifting capacity at 360° swing											
		Reach from machine center											
		10'	15'	20'	25'	30'	35'	40'	45'	50'	Max. reach	Max. ft	
24'3" boom 18'1" jib Counterweight 11,020 lb 34.6" track shoes	45'		14,500*									13,450*	16.2
	40'			14,320*	10,590*							10,300*	25.3
	35'			15,560*	13,890*	10,280*						9,050*	31.0
	30'			15,280*	14,310*	11,320	8,390*					8,390*	35.0
	25'			15,900*	14,630*	11,250	8,740					7,610	37.9
	20'		17,060*	17,400*	14,570	11,030	8,650	6,910				6,910	40.0
	15'		22,740*	19,480	14,020	10,700	8,460	6,830				6,490	41.3
	10'		29,730*	18,300	13,360	10,310	8,230	6,720				6,230	42.0
	5'		20,310*	17,170	12,720	9,920	8,000	6,600				6,130	42.1
	0'		12,640*	16,330	12,190	9,590	7,800	6,500				6,180	41.6
	-5'		12,960*	15,860	11,850	9,360	7,670	6,470				6,400	40.4
	-10'		14,950*	15,690	11,700	9,260	7,630					6,840	38.5
-15'			15,760	11,730	9,310						8,100	33.7	

* Limited by hydraulic lifting capacity.
 The above loads do not exceed 87% of hydraulic lifting capacity or 85% of tipping capacity.
 Working pressure with HLD = 4,350 psi (30 MPa / 300 bar)

LIFTING CAPACITIES FOR EC450


Without lifting tool. Unit: pounds.

	Height of jib top	 Lifting capacity at 360° swing											
		Reach from machine center											
		15'	20'	25'	30'	35'	40'	45'	50'	55'	Max. reach	Max. ft	
28'3" boom 21'4" jib Counterweight 18,700 lb 35.4" track shoes	55'												
	50'		20,190*	15,370*								15,370*	25.0
	45'			19,390*	15,870*							12,880*	32.3
	40'			19,460*	18,190*	15,140*						11,620*	37.5
	35'			19,180*	17,870*	16,810*	13,340*					10,940*	41.4
	30'			19,570*	18,070*	16,820*	13,720					10,480*	44.4
	25'			20,610*	18,700*	16,680	13,630	11,330				10,110*	46.7
	20'		24,090*	22,230*	19,670*	16,380	13,450	11,260				10,040*	48.3
	15'		29,340*	24,240*	19,910	16,000	13,220	11,130				9,720	49.3
	10'		32,990*	24,730	19,270	15,600	12,960	10,980				9,520	49.8
	5'		32,070	23,770	18,670	15,210	12,720	10,840				9,470	49.8
	0'		29,410*	23,030	18,180	14,890	12,510	10,730				9,570	49.3
	-5'		25,090*	22,580	17,850	14,670	12,380	10,680				9,860	48.2
	-10'		25,980*	22,390	17,690	14,560	12,330	10,710				9,820*	46.6
	-15'		27,640*	22,420	17,700	14,590	12,330*					8,790*	44.1
-20'		21,710*	18,440*	15,280*	12,120*						10,760*	37.0	

* Limited by hydraulic lifting capacity.
 The above loads do not exceed 87% of hydraulic lifting capacity or 85% of tipping capacity.
 Working pressure with HLD = 4,350 psi (30 MPa / 300 bar)

LIFTING CAPACITIES FOR EC650

Without lifting tool. Unit: pounds.

	Height of jib top	 Lifting capacity at 360° swing											
		Reach from machine center											
		20'	25'	30'	35'	40'	45'	50'	55'	60'	Max. reach	Max. ft	
33'10" boom 26'7" m jib Counterweight 26,460 lb 31.5" track shoes	50'			22,510*	20,140*	16,240*						13,640*	42.1
	45'			23,580*	22,050*	19,520*	15,170*					12,840*	46.7
	40'			24,400*	23,060*	20,890*	18,530*	12,890*				12,280*	50.4
	35'			25,330*	23,180*	20,920*	18,980*	16,360				11,840*	53.4
	30'			26,500*	23,520*	21,090*	19,030*	16,300	12,970*			11,710*	55.7
	25'		27,580*	27,360*	24,030*	21,370*	19,120*	16,110	13,700			11,620*	57.5
	20'	28,310*	32,560*	28,400*	24,630*	21,670*	18,720	15,850	13,550			11,660*	58.8
	15'	44,430*	35,380*	29,440*	25,180*	21,750	18,240	15,530	13,360			11,650*	59.7
	10'	47,230*	36,840*	30,190*	25,430	21,040	17,750	15,190	13,140	11,480		11,460	60.1
	5'	29,900*	37,290*	30,110	24,440	20,350	17,270	14,860	12,930	10,790*		10,750*	60.1
	0'	17,960*	36,370*	28,890	23,590	19,750	16,840	14,560	12,750			9,820*	59.6
	-5'	16,380*	33,980*	28,000	22,930	19,260	16,490	14,310*	11,470*			8,700*	58.7
	-10'	17,270*	30,260*	25,510*	21,580*	18,270*	15,360*	12,560*	9,400*			8,560*	56.1
	-15'		25,320*	21,870*	18,670*	15,750*	12,980*	10,090*				9,610*	50.8

* Limited by hydraulic lifting capacity.
 The above loads do not exceed 87% of hydraulic lifting capacity or 85% of tipping capacity.
 Working pressure = 4,350 psi (30 MPa / 300 bar)

STANDARD EQUIPMENT

<p>Engine and Electrical System Computer controlled monitoring system Battery disconnecter and main fuel tap Air filter with indicator Hour meter Electric preheating element Revs counter Fuel meter Temperature meter for cooling fluid and hydraulic oil 24 volt electrical system Exhaust pipe elbow</p> <p>Undercarriage – crawler Swing ring in oil bath Triple grouser track shoes with mud holes (EC230B-EC450) Hydraulic track adjuster Derailing shields Top rollers, 2 pcs</p> <p>Undercarriage – wheel Swing ring in oil bath Solid rubber tires 4-wheel drive Four outriggers, fixed plates Oscillating front axle $\pm 7^\circ$ Axles with hub reduction 2-circuit travel brakes</p>	<p>Safety and Comfort Safety bar for control levers Hose rupture valve on boom cylinder Hydraulic refueling pump, 23.8 gal/min (90 l/min) Overload indicator Lights (crawler): 5 working lights, front, halogen 1 working light, rear, halogen Lights (wheel): headlights, high and low beam asymmetrical, halogen 3 working lights, front, halogen 1 working light, rear, halogen Brakelights (EW230B-HD) Rear lights (EW230B-HD) Direction indicators (EW230B-HD) Rotating beacon (EW230B-HD) Instrument lighting Illuminated cab, engine compartment and fuel filling compartment Rear view mirrors, 4 exterior, 1 interior Cab heating with 14 outlets Ergonomically designed and adjustable operator's seat, with heating coils Filtered air intake Cab skylight</p>	<p>Openable side pane in the cab door Emergency exit through rear window Tinted windows (clear forward) Interior glare shield Double intermittent windshield wipers Windshield washers Compressor horn Radio console 48" cab elevation</p> <p>Hydraulics Float position on boom Three variable axial piston working pumps, fourth pump for grapple and generator (EC/EW230B-HD – EC450) Three variable and two fixed axial piston working pumps (EC650) Mode selector, 3 steps (EC/EW230B – EC300) Mode selector, 2 steps (EC450 – EC650) Standard filter cartridges for return, leak oil and respiration filter systems Swing-out oil cooler (EC/EW230B – EC300) Dual main valve for travel (EW230B) and equipment functions</p>	<p>Equipment 19'8" boom (EC/EW230B-HD) 24'3" boom (EC300) 28'3" boom (EC450) 33'10" boom (EC650) 14'5" jib (EC/EW230B-HD) 18'1" jib (EC300) 21'4" jib (EC450) 26'7" jib (EC650) End dampening on all cylinders Spherical link bearings in all connections Friction welded piston rod eyes</p>
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OPTIONAL EQUIPMENT *(Standard on certain markets)*

<p>Engine and Electrical System Electric over speed protector Volvo diesel driven engine and cab preheater with digital timer Immersion heater, 220 V Precyclone and exhaust ejector</p> <p>Undercarriage – crawler Alternative track shoes Skid rails (EC230B-EC450)</p> <p>Undercarriage – wheel Twin wheels 10.00 – 20PR16 Wide base tires Mud guards Stone protection rings Widening rings 2 x 50 mm Articulated outrigger plates Tool box</p>	<p>Safety and Comfort Protective grid for front pane Protective grid for roof pane (FOPS-approved) Protective roof over cab (FOGS-approved) Fire extinguisher Seat belt Protection against overfilling fuel Extra circulation pump for the heating system Extra hose rupture valve on stick cylinders Exterior glare shields Rear window jalousie Air conditioning Micro filter for the cab 24" cab elevation 72" cab elevation (Standard EC650) Radio cassette player</p>	<p>Hydraulics Biologically degradable oil Installation of a 4th working pump (EC/EW230B-HD-EC450) Hydraulic equipment for: grapple (rotating) generator (magnet)</p>	<p>Equipment 22'2" boom (EC/EW230B-HD) 16'11" jib (EC/EW230B-HD)</p>
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Under our policy of continuous product improvement, we reserve the right to change specifications and design without prior notice. The illustrations do not necessarily show the standard version of the machine.

Volvo Construction Equipment

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